



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/667,350

09/23/2003

Yuji Shinkai

117259

3395

25944

7590

10/31/2008

OLIFF & BERRIDGE, PLC

P.O. BOX 320850

ALEXANDRIA, VA 22320-4850

EXAMINER

TUGBANG, ANTHONY D

ART UNIT

PAPER NUMBER

3729

MAIL DATE

DELIVERY MODE

10/31/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,350	09/23/2003	Yuji Shinkai	117259	3395
25944 7590 07/24/2008 OLIFF & BERRIDGE, PLC P.O. BOX 320850 ALEXANDRIA, VA 22320-4850				
			EXAMINER TUGBANG, ANTHONY D	
			ART UNIT 3729	PAPER NUMBER
			MAIL DATE 07/24/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Re-mailed
H/K, SPKE
10/31/08

Office Action Summary	Application No.		Applicant(s)	
	10/667,350		SHINKAI, YUJI	
	Examiner		Art Unit	
	A. Dexter Tugbang		3729	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 April 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 25-36 and 40-44 is/are pending in the application.
- 4a) Of the above claim(s) 27,33 and 34 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 25,26,28-32,35,36 and 40-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 21, 2008 has been entered.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Election/Restrictions

3. Claims 22, 33 and 34 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on February 6, 2006.

Claim Rejections - 35 USC § 103

4. Claims 25, 26, 28, 29, 31, 32, , 35, 41 through 44, are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent Publication JP 11-254670, referred to hereinafter as JP'670 in view of Tago et al.

JP'670 discloses substantially all of the limitations of the claimed manufacturing method, including: forming an actuator unit (in Fig. 1) including a piezoelectric element (e.g. 3) disposed

on an ink passage unit (e.g. 4), a surface electrode (e.g. 3b) disposed on the piezoelectric element having a main electrode portion opposed to a pressure chamber of a plurality of pressure chambers and a connecting portion opposed to a wall portion of a plurality of wall portions defining each of the pressure chambers of the ink passage unit, a land (top horizontal portions of 3b) disposed on the piezoelectric element in a region opposed to the wall portion, the land being electrically connected to the surface electrode, wherein a terminal (e.g. 2a) is to be electrically connected to the land; and disposing a metallic bond (e.g. 6) and an insulating thermosetting resin (e.g. 9) between the terminal and the land and the insulating resin forms a protrusion in the connecting portion between the main electrode portion and the land.

JP'670 does not teach that there is initially a gap between the land and the terminal when pressing the land the terminal and JP'670 does not appear to mention heating the metallic bond and the thermosetting resin with a space that exists between the one pair of the land and the terminal and another pair of the land and the terminal.

Tago teaches a bonding process that includes initially forming a gap between the land and the terminal (in Fig. 14A), pressing the land the terminal together, and then heating the metallic bond and an epoxy thermosetting resin (e.g. 6b in Fig. 14a) to achieve the very same purpose of electrically connecting and bonding a terminal (e.g. 2) and a land (e.g. 26). The thermosetting resin (e.g. 6b) of Tago corresponds to one pair and another pair of a set of terminals and lands with a space between each pair, or between the thermosetting resin for each pair.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of JP'670 by utilizing the bonding process of Tago, to at least accomplish the very same purpose of bonding a terminal to a land.

5. Claims 30, 36 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP'670 in view of Tago et al, as applied to claims 25 and 31 above, and further in view of Kishi 6,095,641.

JP'670, as modified by Tago et al, discloses the claimed manufacturing method as relied upon above. The modified JP'670 method does not teach that the pressure chambers are arranged in a matrix with at least 3 rows and 3 columns.

Kishi shows that in making an ink jet print head, stacking the pressure chambers (as shown in Fig. 1) can occur to product a matrix of pressure chambers of at least three rows and at least three columns in a plane of an ink passage unit. This process of Kishi provides an increased manufacturing efficiency (col. 3, lines 7-11) and also allows more ink to eject with a higher resolution.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of JP'670, by stacking the pressure chambers to produce a matrix of pressure chambers of at least three rows and at least three columns in a plane of an ink passage unit, as taught by Kishi, to provide the advantages of increased manufacturing efficiency and allow more ink to eject with a higher resolution.

Response to Arguments

6. Applicant's arguments with respect to claims 25 and 31 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Dexter Tugbang whose telephone number is 571-272-4570. The examiner can normally be reached on Monday - Friday 7:30 am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 571-272-4690. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

**/A. Dexter Tugbang/
Primary Examiner
Art Unit 3729**

July 21, 2008